Release notes for ENDF/B Development g-092_U_238 evaluation

December 2, 2016

- `checkr` Warnings:

    1. A previous error halted parsing of the current section
       MAT=9237, MF= 1, MT=451 (1): Parsing stopped

    ```
    ERROR(S) FOUND IN MAT=9237, MF= 1, MT=451
        SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      273 TO     287
    ```

    2. Although the ENDF manual says MT=18/MF=4 is allowed only for the neutron subli-
       brary, this is too restrictive as all fission events lead to emitted neutrons
       MAT=9237, MF= 4, MT= 18 (0): Ang. dist. OK

    ```
    ERROR(S) FOUND IN MAT=9237, MF= 4, MT= 18
        FILE  4 ALLOWED ONLY IN A NEUTRON DATA SUBLIBRARYRECORD NUMBER     588
    ```

    3. A previous error halted parsing of the current section
       MAT=9237, MF= 4, MT= 18 (1): Parsing stopped

    ```
    ERROR(S) FOUND IN MAT=9237, MF= 4, MT= 18
        SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      588 TO     590
    ```

    4. Although the ENDF manual says MT=18/MF=5 (PFNS) and MT=455 (nubar) are al-
       lowed only for the neutron sublibrary, this is too restrictive as all fission events lead to
       emitted neutrons.
       MAT=9237, MF= 5, MT= 18 (0): PFNS, nubar OK

    ```
    ERROR(S) FOUND IN MAT=9237, MF= 5, MT= 18
        FILE  5 NOT ALLOWED FOR NSUB =    0              RECORD NUMBER     592
    ```

    5. A previous error halted parsing of the current section
       MAT=9237, MF= 5, MT= 18 (1): Parsing stopped

    ```
    ERROR(S) FOUND IN MAT=9237, MF= 5, MT= 18
        SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      592 TO     600
    ```

    6. Although the ENDF manual says MT=18/MF=5 (PFNS) and MT=455 (nubar) are al-
       lowed only for the neutron sublibrary, this is too restrictive as all fission events lead to
       emitted neutrons.
       MAT=9237, MF= 5, MT=455 (0): PFNS, nubar OK

    ```
    ERROR(S) FOUND IN MAT=9237, MF= 5, MT=455
        FILE  5 NOT ALLOWED FOR NSUB =    0              RECORD NUMBER     601
    ```

    7. A previous error halted parsing of the current section
       MAT=9237, MF= 5, MT=455 (1): Parsing stopped

    ```
    ERROR(S) FOUND IN MAT=9237, MF= 5, MT=455
        SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      601 TO    1190
    ```

- `checkr` Errors:

    1. A variable is outside the allowed ENDF range
       MAT=9237, MF= 1, MT=451 (0): Variable range

```
ERROR(S) FOUND IN MAT=9237, MF= 1, MT=451
   MOD =    1 OUT OF RANGE    0 -    0          RECORD NUMBER    273
```

2. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9237, MF= 1, MT=455 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9237, MF= 1, MT=455
   SECTION  1/455 NOT IN DIRECTORY              RECORD NUMBER    294
```

3. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9237, MF= 1, MT=456 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9237, MF= 1, MT=456
   SECTION  1/456 NOT IN DIRECTORY              RECORD NUMBER    302
```

4. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9237, MF= 3, MT= 3 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9237, MF= 3, MT=  3
   SECTION  3/  3 NOT IN DIRECTORY              RECORD NUMBER    308
```

5. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9237, MF= 3, MT= 5 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9237, MF= 3, MT=  5
   SECTION  3/  5 NOT IN DIRECTORY              RECORD NUMBER    437
```

6. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9237, MF= 3, MT= 16 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9237, MF= 3, MT= 16
   SECTION  3/ 16 NOT IN DIRECTORY              RECORD NUMBER    488
```

7. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9237, MF= 3, MT= 17 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9237, MF= 3, MT= 17
   SECTION  3/ 17 NOT IN DIRECTORY              RECORD NUMBER    522
```

8. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9237, MF= 3, MT= 18 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=9237, MF= 3, MT= 18
   SECTION  3/ 18 NOT IN DIRECTORY              RECORD NUMBER    534
```

9. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=9237, MF= 6, MT= 5 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=9237, MF= 6, MT=  5
         SECTION  6/  5 NOT IN DIRECTORY                    RECORD NUMBER    1192
```

10. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9237, MF= 6, MT= 16 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=9237, MF= 6, MT= 16
         SECTION  6/ 16 NOT IN DIRECTORY                    RECORD NUMBER    6317
```

11. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=9237, MF= 6, MT= 17 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=9237, MF= 6, MT= 17
         SECTION  6/ 17 NOT IN DIRECTORY                    RECORD NUMBER    8198
```

- `fizcon` Errors:

  1. Missing files (probably spectra for outgoing particles)
     MAT -1 MF 6 (1): Missing files (a)

```
      ERROR(S) - MISSING SECTIONS IN MAT   -1 MF  6
         PRESENCE OF FILE 3, MT=  18 REQUIRES AN EQUIVALENT SECTION IN FILE 6
```

- `fudge-4.0` Warnings:

  1. Cross section does not match sum of linked reaction cross sections
     crossSectionSum label 0: nonelastic (Error # 0): CS Sum.

```
      WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 55.70%
```

- `fudge-4.0` Errors:

  1. Calculated and tabulated Q values disagree.
     reaction label 1: n[multiplicity:'3'] + U235 + gamma (Error # 0): Q mismatch

```
      WARNING: Calculated and tabulated Q-values disagree: -17851741.92391968 eV vs -1.78682e7 eV!
```

  2. Calculated and tabulated thresholds don't agree
     reaction label 2: n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] [total fission] / Cross section: (Error # 0): Threshold mismatch

```
      WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3.42e6 eV!
```

  3. Energy range of data set does not match cross section range
     reaction label 2: n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] [total fission] / Product: n__a / Distribution: / uncorrelated - energy - general-Evaporation: (Error # 0): Domain mismatch (a)

```
      WARNING: Domain doesn't match the cross section domain: (1e-05 -> 20000000.0) vs (3420000.0 -> 20000000.0)
```

  4. Energy range of data set does not match cross section range
     reaction label 2: n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] [total fission] / Product: n__b / Distribution: / uncorrelated - energy - general-Evaporation: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (1e-05 -> 20000000.0) vs (3420000.0 -> 20000000.0)
```

5. Energy range of data set does not match cross section range
   reaction label 2: n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] [total fission] / Product: n__c / Distribution: / uncorrelated - energy - general-Evaporation: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (1e-05 -> 20000000.0) vs (3420000.0 -> 20000000.0)
```

6. Energy range of data set does not match cross section range
   reaction label 2: n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] [total fission] / Product: n__d / Distribution: / uncorrelated - energy - general-Evaporation: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (1e-05 -> 20000000.0) vs (3420000.0 -> 20000000.0)
```

7. Energy range of data set does not match cross section range
   reaction label 2: n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] [total fission] / Product: n__e / Distribution: / uncorrelated - energy - general-Evaporation: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (1e-05 -> 20000000.0) vs (3420000.0 -> 20000000.0)
```

8. Energy range of data set does not match cross section range
   reaction label 2: n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'6 delayed'] [total fission] / Product: n__f / Distribution: / uncorrelated - energy - general-Evaporation: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (1e-05 -> 20000000.0) vs (3420000.0 -> 20000000.0)
```

9. Calculated and tabulated Q values disagree.
   reaction label 3: sumOfRemainingOutputChannels (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -5637392.186523438 eV vs -6.1436e6 eV!
```